

SPECIFICATION:

Please amend paragraphs 6, 18 and 29 as follows:

[0006] The present invention provides a proportional rotary torquer including: a stator having ~~two-plural~~ permanent magnets; and a rotor having a rotor core which ~~two-plural~~ salient poles are formed at, and one or more rotor coils are wound around, wherein an electric current is supplied to the rotor coils so that the relative angle position of the rotor and the stator is displaced. The permanent magnet, in the circumferential direction, has two end portions and one center portion, and the radial thickness of the end portions is from 90% to 95% of that of the center portion. The distance from the radial outline of a circumferential center portion of a salient pole to the rotation center of the rotor core is not more than 99% of that from the radial outline of a circumferential end portion of the salient pole to the rotation center of the rotor core. The angle between the line connecting one of the circumferential outlines of the salient pole and the rotation center of the rotor core and that connecting the other circumferential outline of the same salient pole and the rotation center of the rotor core is not less than 100 degrees.

[0018] Fig. 3A is a plan view showing a structure of the above rotor core, and Fig. 3B is a plan view showing a structure of the above permanent magnet. As shown in Fig. 3A, the salient poles 3a formed at the rotor core 3 have circular arcs 3b having radii R3 at the circumferential center portions, and circular arcs 3f having radii R4 at the circumferential end portions. That is, the facing surfaces of the salient poles 3a, which face the permanent magnets 1a and 1b, are formed in the shapes of circular arc shapes of which the radii of circular arcs 3b at the circumferential center portions and that of circular arcs 3f at circumferential end portions are different from each other, and a distance G exists between the center positions of the circular arcs having the radii R3 and R4. Specifically, the distance from the radial outlines of the circumferential center positions of the salient poles 3a to the rotation center of the rotor core 3 are not more than 99% of that from the radial outlines of the circumferential end portions of the salient poles 3a to the rotation center of the rotor core 3. The angle K between the line connecting one of circumferential outlines 3h of the salient pole 3a and the rotation

center of the rotor core 3 and the line connecting the other circumferential outline 3h of the same salient pole 3a and the rotation center of the rotor core 3 is not less than 100 degrees.

[0029] The proportional rotary torquer of the present invention can be applied not only to valves, such as throttle body valves, pressure control valves, proportional bypass valves, but also to various fields, such as ~~peripheral devices for driving a drive of a computer~~ rudder control of missiles or vehicles, automatic payment machines, control of laser beam deviation, direction control of parabolic antennas of man-made satellites, direction control of solar power generators, control of automatic tracking apparatuses of cameras. The present invention can be applied not only to the structures that may produce the opposite torque proportional to the angular displacement of the rotor, but also to the structures which only load the rotor with the dead weight of the components driven by the proportional rotary torquer or other resistance. In this case, although it is required using sensors to detect and feed back the angular position of the rotor, the rotation speed can be controlled in accordance with the magnitude of the supplied exciting current if the load is approximately constant.